



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/716,603	11/20/2000	Robert D. Barnes	GEMS:0131/yod 15-IS-5887	1553
7590	01/20/2004		EXAMINER	
Patrick S. Yoder Fletcher, Yoder & Van Someren P.O. Box 692289 Houston, TX 77269-2289			JOHNSON, TIMOTHY M	
			ART UNIT	PAPER NUMBER
			2625	
DATE MAILED: 01/20/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/716,603

Applicant(s)

BARNES ET AL.

Examiner

Timothy M Johnson

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### **Disclosure**

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The Examiner suggests the following title:

"In a Medical System Environment, Transmitting Progressive Lossless Integer Wavelet Huffman Compressed Image Data in Various Resolutions Depending on Desired or Available Resolution at the Client Receiver."

### **Claim Rejections - 35 USC § 103**

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2-9, 11, 13-24, 27-32, 34-36, 45-46, 48-52, and 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guetz, 6,091,777, in view of Zandi et al., 5,867,602.

For claim 2, decomposing image data into sets using wavelet decomposition is provided by Guetz in at least the abstract. Guetz does not explicitly provide for a lossless wavelet decomposition, but a lossless wavelet decomposition is conventional and well known and is provided by Zandi in at least the title and abstract by having a wavelet transformation with exact reconstruction, and is therefore lossless. It would've

been obvious to one having ordinary skill in the art at the time the invention was made to use a lossless wavelet transform with Guetz, since doing so provides for exact reconstruction. Compressing the sets using lossless compression is provided by Guetz in at least the paragraph bridging cols. 9-10. Compiling a data stream comprising the compressed sets arranged sequentially in a desired order based on the decomposition is provided by Guetz in at least the abstract, the last full paragraph in c. 5, the paragraph bridging cols. 6-7, the first two full paragraphs in c. 9, c. 13, lines 32-40, and c. 17, lines 26-35.

For claim 3, lossless integer wavelet decomposition is provided by Zandi in at least the title and abstract.

For claim 4, selectively transmitting at least a portion of the data stream, the portion being determined based on user viewing capabilities is provided by Guetz in at least the abstract, penultimate full paragraph in c. 4, second full paragraph in c. 5, the paragraph bridging cols. 5-6, the last full paragraph in c. 6, the paragraph bridging cols. 6-7, the first two full paragraphs in c. 9, c. 12, lines 34-48.

For claim 5, wherein the data stream comprises a header, the header comprising a qty of the data sets is not explicitly provided by Guetz, but is considered provided by Zandi in at least c. 37, lines 33-42, and the paragraph bridging cols. 41-42, is provided by the width, height, bits per pixel, and a number of bits in coded information. It

would've been obvious to one having ordinary skill in the art at the time the invention was made to use a header to indicate how to decompress information, since this is conventionally used, since not all information can usually be pure coded data, and because using the information of Zandi, provides for the capability of more advanced compression and decompression of the image.

For claim 6, the desired order comprising an order of increasing resolution is provided by Guetz as noted above for at least claim 2.

For claim 7, storing the data stream is provided by Guetz in at least the third full paragraph in c. 4, and further by Zandi in at least Fig. 13, block 1309.

For claim 8, wherein the data sets correspond to resolution levels is provided by Guetz as noted above for at least claim 2.

For claim 9, wherein decomposing comprises creating hierarchical subbands comprising a low frequency and high frequency components at a resolution level and further decomposing the low frequency component of the resolution level to form a next lower resolution level until a desired smallest resolution level is reached, each set corresponding to a respective resolution level, each set comprising a low frequency and high frequency components at the respective resolution level is at least mostly provided by Guetz in at least c. 11, line 30 – c. 12, line 10. Guetz is silent with respect to further

Art Unit: 2625

decomposing the low frequency component to produce further levels. While this is the most common way to produce further levels, Guetz is silent. In any case, for the conventionality of this, see at least Figs. 3A, 5D, 7, and 9 of Zandi illustrating this conventional and well known process. Note that  $h_0$  is a low pass filter as indicated in c. 8, lines 32-40, and as shown in Figs. 3A and 7, for example. It would've been obvious to one having ordinary skill in the art at the time the invention was made to further decompose the low frequency using the wavelet transform of Zandi, since Zandi provides for efficient computation filters, because low frequency information is generally more important than high frequency information, and where the decomposition of Guetz can also be provided by using the low frequency component, since Guetz is merely silent.

For claim 11, wherein the act of compressing the sets comprises dividing the sets into subregions to be individually compressed is not explicitly provided by Guetz, but is provided by Zandi in at least c. 46, line 40 – c. 47, line 8. It would've been obvious to one having ordinary skill in the art at the time the invention was made to provide for compressing subregions, since it is advantageous to adaptively compress different regions to different qualities as desired or as needed.

For claim 13, see the rejection of at least claim 2 above, where, in Guetz, the users can explicitly choose the levels and layers, or “viewport” as to how they want or

can view the image based on receiver/decoder resources. Furthermore, see also Zandi in at least c. 46, line 40 – c. 47, line 8.

For claim 14, the user view port comprises a resolution level is provided by Guetz where cited above for at least claim 2 and 4, and Zandi where cited above, where at least a resolution level is selected as a “viewport”.

For claim 15, see the rejection of at least claim 2.

For claim 16, see the rejection of at least claim 2, where it is clear from Guetz that the receiver/client decoder will take only resolutions up to the capacity of the receiver capability and/or user desire.

For claim 17, the user viewport comprises a workstation is provided by the “client users” in a network environment, e.g. inter or intranets including LANs or WANs (abstract of Guetz), and is therefore a “workstation”, which is basically the definition of such.

For claim 18, see the rejection of at least claim 3.

For claim 19, the series is ordered sequentially opposite the order of generation of the data sets during lossless wavelet decomposition is provided by at least Guetz in

Art Unit: 2625

at least c. 11, line 20 – c. 12, line 10, and c. 12, lines 34-68, and as noted above for claim 2, where the lowest layer generated last is ordered oppositely.

For claim 20, wherein the act of determining a parameter of a user view port comprises acquiring a resolution from the client is provided by Guetz where cited above for claim 2.

For claim 21, transmitting over a network is provided by Guetz in at least the abstract.

For claim 22, see the rejection of at least claims 2 and 7.

For claim 23, see the rejection of at least claim 3.

For claim 24, see the rejection of at least claim 9.

For claim 27, see the rejection of at least claim 2.

For claim 28, see the rejection of at least claim 16.

For claim 29, see the rejection of at least claim 2.

For claim 30, see the rejection of at least claims 2 and 7. A “file” is considered provided by Guetz, since the compressed data must be distinguished in the computer network for decoding at the client workstation, and further it would've been obvious to one having ordinary skill in the art at the time the invention was made to understand that a file is provided, since Zandi explicitly uses this term with respect to the compressed



Art Unit: 2625

data in at least the paragraph bridging cols. 46-47, and can be used in the computer system of Guetz.

For claim 31, see the rejection of at least claim 2.

For claim 32, see the rejection of at least claim 2 and the resolution levels of Zandi as well, e.g. Figs. 5D – 9.

For claim 34, see the rejection of at least claim 5 and Figs. 24A-B, where, as the name implies, the header is located before the decomposed and compressed data.

For claim 35, see the rejection of at least claim 14.

For claim 36, see the rejection of at least claims 2 and 7, and a compression interface is clearly provided by Guetz in a computer system CODEC interface.

For claim 45, see the rejection of at least claim 3.

For claim 46, see the rejection of at least claim 9.

For claim 48, see the rejection of at least claims 2 and 4.

For claim 49, see the rejection of at least claim 2, and where the system of Guetz is preferably implemented in software for example.

For claim 50, see the rejection of at least claims 2 and 4.

For claim 51, see the rejection of at least claim 3.

For claim 52, see the rejection of at least claim 9.

For claim 54, see the rejection of at least claim 7 and 30.

For claim 55, see the rejection of at least claim 5.

4. Claims 10, 25, 33, 47, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guetz, 6,091,777, and Zandi et al., 5,867,602, as applied to claims above, and further in view of Liang, 6,445,823.

For claim 10, wherein the act of compressing the sets comprises the high frequency components using actual values and compressing the low frequency component at the desired smallest resolution level using prediction errors is not explicitly provided by Guetz, but is conventional and well known and is provided by Liang in at least the paragraph bridging cols. 7-8 and the third full paragraph in c. 9, by optionally using predictive error coding at the low frequency smallest resolution level. Guetz provides for compressing the actual values of the high frequency components except for the low frequency component, as does Liang. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use predictive error coding of the smallest set, since this provides for further compression.

For claim 25, see the rejection of at least claim 10.

For claim 33, see the rejection of at least claim 10.

For claim 47, see the rejection of at least claim 10.

For claim 53, see the rejection of at least claim 10.

5. Claims 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guetz, 6,091,777, and Zandi et al., 5,867,602, as applied to claims above, and further in view of Zeng, 2002/0003906.

For claim 12, wherein the act of compressing the sets comprises selecting a compression algorithm for each subregion based on an entropy of each subregion is not explicitly provided by Guetz or Zandi, but is well known and conventional and is provided by Zeng in at least paragraphs 0030 – 0033 on page 3. It would've been obvious to one having ordinary skill in the art at the time the invention was made to select each subregion based on entropy, since this provides for the optimal wavelet transformation.

For claim 26, see the rejection of at least claim 12.

6. Claims 37-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guetz, 6,091,777, and Zandi et al., 5,867,602, as applied to claims above, and further in view of Cooke, Jr. et al. 6,574,629.

For claims 37-44, the conventional and well known medical imaging systems are not explicitly provided by Guetz or Zandi; however, Zandi does explicitly mention that

Art Unit: 2625

the invention is well suited for medical imaging systems in at least the penultimate full paragraph in c. 47 for superior lossless compression. Cooke provides for the conventionality of the well known medical modalities in at least the last full paragraph in c. 33 and the paragraph bridging cols. 33-34, to include the claimed PACS (claim 37); one or more imaging systems as provided as follows and as already noted provided by at least Zandi (claim 38); MRI (claim 39); CT (claim 40); PET (claim 41); RF (claim 42); CR (claim 43); and US (claim 44). It would've been obvious to one having ordinary skill in the art at the time the invention was made to use a plurality of different modalities, since this provides for the advantage of a variety of medical image data inputs, where Zandi provides for superior lossless compression, and where Cooke notes that the list is "not meant to be exhaustive".

Art Unit: 2625

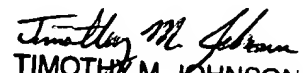
**Contact Information**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M. Johnson whose telephone number is (703) 306-3096, or the Supervisory Patent Examiner, Bhavesh M. Mehta, whose telephone number is (703) 308-5246.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone numbers are (703) 305-4700, (703) 305-4750, (703) 305-9600, or (703) 305-3800, or Customer Service at (703) 306-0377.

The Group Art Unit FAX number is 703-872-9306.

Timothy M. Johnson  
Patent Examiner  
Art Unit 2625  
January 13, 2004

  
TIMOTHY M. JOHNSON  
PRIMARY EXAMINER